WHAT IS CLAIMED IS:

1. A compound comprising a plurality of linked nucleosides, wherein:

each nucleoside includes a ribofuranosyl sugar portion and a base portion; and

at least one of said nucleosides bears at a 2'-O-position or a 3'-O-position a substituent having formula:

$$-R_A-N-C(X)-O-R_{1a}$$

or

$$-C(X)-N(R_{1b})(R_{1c})$$

where:

R_A is alkyl having from 1 to about 10 carbon atoms or $(CH_2-CH_2-Q)_x$;

R_{1a} is alkenyl having 2 to about 10 carbon atoms;

R_{1b} and R_{1c}, independently, are H, R_2, R_A, an amine protecting group or have formula $R_A-N(R_{1d})(R_{1e})$, $C(X)-R_2$, $C(X)-R_A-R_2$, $C(X)-Q-R_A-R_2$, or $C(X)-Q-R_2$;

R_{1d} and R_{1e}, independently, are H, R_2, R_A, an amine protecting group or have formula $C(X)-R_2$, $C(X)-R_A-R_2$, $C(X)-Q-R_A-R_2$, or $C(X)-Q-R_2$;

R_2 is a steroid molecule, a reporter molecule, a lipophilic molecule, a reporter enzyme, a peptide, a protein, includes folic acid, or has formula $-Q-(CH_2CH_2-Q-)_x-R_3$;

X is O or S;

each Q is, independently, is NH, O, or S;

x is 1 to about 200;

R_3 is H, R_A, $C(O)OH$, $C(O)OR_A$, $C(O)R_4$, R_A-N_3, or R_A-NH_2;

R_4 is Cl, Br, I, SO_2R_5 or has structure:

;

m is 2 to 7; and

R_5 alkyl having 1 to about 10 carbon atoms.

2. The compound of claim 1 wherein more than one of said nucleosides bears said substituent at a 2'-O-position or a 3'-O-position.

3. The compound of claim 1 wherein R_A is alkyl having 1 to about 10 carbon atoms.

4. The compound of claim 1 wherein R_A is alkyl having 6 carbon atoms.

5. The compound of claim 1 wherein R_{1a} is alkenyl having 2 to about 10 carbon atoms.

6. The compound of claim 1 wherein R_{1a} is 2-propenyl.

7. The compound of claim 1 wherein R_{1b} is H and R_{1c} is H.

8. The compound of claim 1 wherein R_{1b} is H and R_{1c} is R_2.

9. The compound of claim 1 wherein R_{1b} is H and R_{1c} is alkyl having 1 to about 10 carbon atoms.

10. The compound of claim 1 wherein R_{1b} is H and R_{1c} is alkyl 1 or 2 carbon atoms.

11. The compound of claim 1 wherein R_{1b} and R_{1c}, together, are phthalimido.

12. The compound of claim 1 wherein R_{1b} is H and R_{1c} is R_A-N(R_{1d})(R_{1e}).

13. The compound of claim 12 wherein R_{1d} is H and R_{1e} is R_2.

14. The compound of claim 12 wherein R_{1d} is H and R_{1e} is alkyl having 1 to about 10 carbon atoms.

15. The compound of claim 12 wherein R_{1c} is H and R_{1e} is alkyl 1 or 2 carbon atoms.

16. The compound of claim 12 wherein R_{1d} and R_{1e}, together, are phthalimido.

17. The compound of claim 12 wherein R_{1d} is H and R_{1e} is
R_2 or $C(X)-Q-R_2$.

18. The compound of claim 17 wherein R_{1e} is $C(O)-O-R_2$.

19. The compound of claim 17 wherein R_2 includes cholesterol or folic acid.

20. A nucleoside comprising a ribofuranosyl sugar portion and a base portion, wherein said nucleoside bears at a 2'-O-position or a 3'-O-position a substituent having formula:

$$-R_A-N-C(X)-O-R_{1a}$$

or

$$-C(X)-N(R_{1b})(R_{1c})$$

where:

R_A is alkyl having from 1 to about 10 carbon atoms or $(CH_2-CH_2-Q)_x$;

R_{1a} is alkenyl having 2 to about 10 carbon atoms;

R_{1b} and R_{1c}, independently, are H, R_2, R_A, an amin protecting group or have formula $R_A-N(R_{1d})(R_{1e})$, $C(X)-R_2$, $C(X)-R_A-R_2$, $C(X)-Q-R_A-R_2$, or $C(X)-Q-R_2$;

R_{1d} and R_{1e}, independently, are H, R_2, R_A, an amine protecting group or hav formula $C(X)-R_2$, $C(X)-R_A-R_2$, $C(X)-Q-R_A-R_2$, or $C(X)-Q-R_2$;

R_2 is a steroid molecule, a reporter molecule, a lipophilic molecule, a reporter enzyme, a peptide, a protein, includes folic acid, or has formula -Q-$(CH_2CH_2$-Q-$)_x$-R_3;

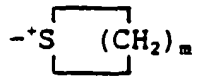
X is O or S;

each Q is, independently, is NH, O, or S;

x is 1 to about 200;

R_3 is H, R_A, C(O)OH, C(O)OR_A, C(O)R_4, R_A-N_3, or R_A-NH_2;

R_4 is Cl, Br, I, SO_2R_5 or has structure:



;

m is 2 to 7; and

R_5 alkyl having 1 to about 10 carbon atoms.

21. A compound comprising a plurality of linked nucleosides, wherein:

each nucleoside includes a ribofuranosyl sugar portion and a base portion; and

at least one of said nucleosides includes a pyrimidine base which bears at its 5-position a substituent having formula:

$$-R_A-O-C(X)-N(R_{1b})(R_{1c})$$

where:

R_A is alkyl having from 1 to about 10 carbon atoms or $(CH_2-CH_2-Q)_x$;

R_{1b} and R_{1c}, independently, are H, R_2, R_A, an amin protecting group or have formula R_A-N(R_{1d})(R_{1e}), C(X)-R_2, C(X)-R_A-R_2, C(X)-Q-R_A-R_2, or C(X)-Q-R_2;

R_{1d} and R_{1e}, independently, are H, R_2, R_A, an amine protecting group or have formula C(X)-R_2, C(X)-R_A-R_2, C(X)-Q-R_A-R_2, or C(X)-Q-R_2;

R_2 is a steroid molecul , a reporter molecul , a lipophilic molecul , a reporter enzyme, a p ptide, a

protein, includes folic acid, or has formula -Q-$(CH_2CH_2$-
Q-$)_x$-R_3;

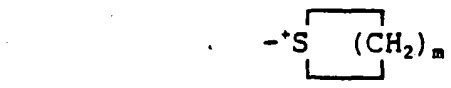
X is O or S;

each Q is, independently, is NH, O, or S;

x is 1 to about 200;

R_3 is H, R_A, C(O)OH, C(O)OR_A, C(O)R_4, R_A-N_3, or R_A-NH_2;

R_4 is Cl, Br, I, SO_2R_5 or has structure:



;

m is 2 to 7; and

R_5 alkyl having 1 to about 10 carbon atoms.

22. A nucleoside comprising a ribofuranosyl sugar portion and a pyrimiddine base portion, wherein said base portion bears at its 5-position a substituent having formula:

$$-R_A-O-C(X)-N(R_{1b})(R_{1c})$$

where:

R_A is alkyl having from 1 to about 10 carbon atoms or $(CH_2-CH_2-Q)_x$;

R_{1b} and R_{1c}, independently, are H, R_2, R_A, an amin protecting group or have formula R_A-N(R_{1d})(R_{1e}), C(X)-R_2, C(X)-R_A-R_2, C(X)-Q-R_A-R_2, or C(X)-Q-R_2;

R_{1d} and R_{1e}, independently, are H, R_2, R_A, an amin protecting group or have formula C(X)-R_2, C(X)-R_A-R_2, C(X)-Q-R_A-R_2, or C(X)-Q-R_2;

R_2 is a steroid molecule, a reporter molecule, a lipophilic molecule, a reporter enzyme, a peptide, a protein, includes folic acid, or has formula -Q-$(CH_2CH_2$-
Q-$)_x$-R_3;

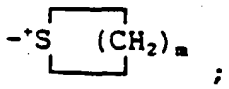
X is O or S;

each Q is, ind p ndently, is NH, O, or S;

x is 1 to about 200;

R_3 is H, R_A, C(O)OH, $C(O)OR_A$, $C(O)R_4$, R_A-N_3, or R_A-NH_2;

R_4 is Cl, Br, I, SO_2R_5 or has structure:



;

m is 2 to 7; and

R_5 alkyl having 1 to about 10 carbon atoms.

23. A method for modulating the production of a protein by an organism comprising contacting an organism with a compound of claim 1.

24. A method for modulating the production of a protein by an organism comprising contacting an organism with a compound of claim 20.

25. A method for modulating the production of a protein by an organism comprising contacting an organism with a compound of claim 21.

26. A method for modulating the production of a protein by an organism comprising contacting an organism with a compound of claim 22.

27. A method of treating an animal having a diseas characterized by undesired production of protein comprising contacting said animal with a compound of claim 1.

28. A method of treating an animal having a disease characterized by undesired production of protein comprising contacting said animal with a compound of claim 20.

29. A method of treating an animal having a disease characterized by und sired production of protein comprising contacting said animal with a compound of claim 21.

30. A method of treating an animal having a disease characterized by undesired production of protein comprising contacting said animal with a compound of claim 22.

31. A method for detecting the presence or absenc of an RNA in a biological sample suspected of containing said RNA comprising contacting said sample with a compound of claim 1.

32. A method for detecting the presence or absence of an RNA in a biological sample suspected of containing said RNA comprising contacting said sample with a compound of claim 20.

33. A method for detecting the presence or absence of an RNA in a biological sample suspected of containing said RNA comprising contacting said sample with a compound of claim 21.

34. A method for detecting the presence or absenc of an RNA in a biological sample suspected of containing said RNA comprising contacting said sample with a compound of claim 22.